

**ALLEGHENY NATIONAL FOREST
GYPSY MOTH SPRAY PROJECT
FINAL REPORT FOR 1992**

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In 1992, 23,362 acres were aerially treated with *Bacillus thuringiensis* (B.t.). Approximately 3,876 acres received one treatment at the rate of 32 BIU (billion international units) undiluted per acre, with the remaining 19,486 acres receiving two treatments at 24 BIU per acre per application. The spray project began on May 21st and was completed 13 days later, on June 2nd. The 1992 spray project was a success, with 95.75 and 97.42 average percent egg mass reduction for single and double applications of B.t., respectively. Success in this case is defined as an average egg mass reduction of 80 percent or greater for any given spray block. With the exception of block #53, all blocks for which data were collected were successful. Table 1 shows the percent egg mass reduction for each spray block. Data were not collected for blocks 5, 10, and 47.

Table 1.--Average percent egg mass reduction/block

Block #	Application	% Reduction	Block #	Application	% Reduction
1	double	100	31	single	100
2	double	94	32	single	100
3	single	95	33	double	100
4	double	100	34	double	100
6	single	100	35	double	100
7	double	100	36	double	95
8	double	100	37	double	98
9	double	100	38	double	100
11	single	86	39	double	98
12	double	100	40	double	98
13	double	100	41	double	98
14	double	100	42	double	100
15	double	100	43	double	99
16	single	100	44	double	100
17	double	100	45	double	100
18	double	100	46	double	94
19	double	100	48	double	100
20	single	100	49	double	97
21	double	100	50	double	98
22	single	100	51	double	90
23	single	99	52	double	90
24	double	97	53	double	56
25	double	95	54	single	87
26	double	100	55	single	100
27	double	100	56	single	83
28	single	100	57	single	95
29	double	100	58	single	95
30	double	100	59	single	92

The exact cause for the failure of block 53 can not be determined. Blocks which are in close proximity to block 53, with similar topography, forest type and prespray egg mass counts were successful in egg mass reduction.

Table 2 shows average egg mass reduction for all blocks sampled in that category, for Allegheny National Forest suppression projects during 1987 through 1992, for limited number of spray blocks (shown in parentheses).

Table 2.--Egg mass reduction in 1987-1992 ANF spray blocks

Year	1987	1988	1989	1992
Population trend	Increasing	Declining	Declining	Increasing
Single <i>B.t.</i> Application	44% (84)	73% (18)	95% (12)	95.7% (16)
Double <i>B.t.</i> Application	-- (0)	92% (10)	98% (45)	97.4% (40)
Diflubenzuron	N/A	N/A	99.5% (29)	N/A
TOTAL BLOCKS IN PROJECT	86	29	92	59

The application rates for years 1987 through 1989 were 16 BIU, diluted in 128 ounces (1 gallon) of total formulation per acre for single application, applied twice for double application. The application rates for 1992 were 32 BIU undiluted per acre for single application and 24 BIU undiluted per acre, applied twice, for double application. This, combined with whether a population was increasing or decreasing, may help explain the different success rates from year to year. Other factors influencing these rates may be weather, the presence or absence of other controlling factors (nucleopolyhedrosis virus (NPV) and/or *Entomophaga maimaiga*), or the presence of predators and parasites.